No. 626,909.

Patented June 13, 1899.

C. F. JEANSÉN.

SIGHT MECHANISM FOR DISAPPEARING GUNS.

(Application filed Dec. 2, 1898.)

(No Model.)

3 Sheets—Sheet 1.

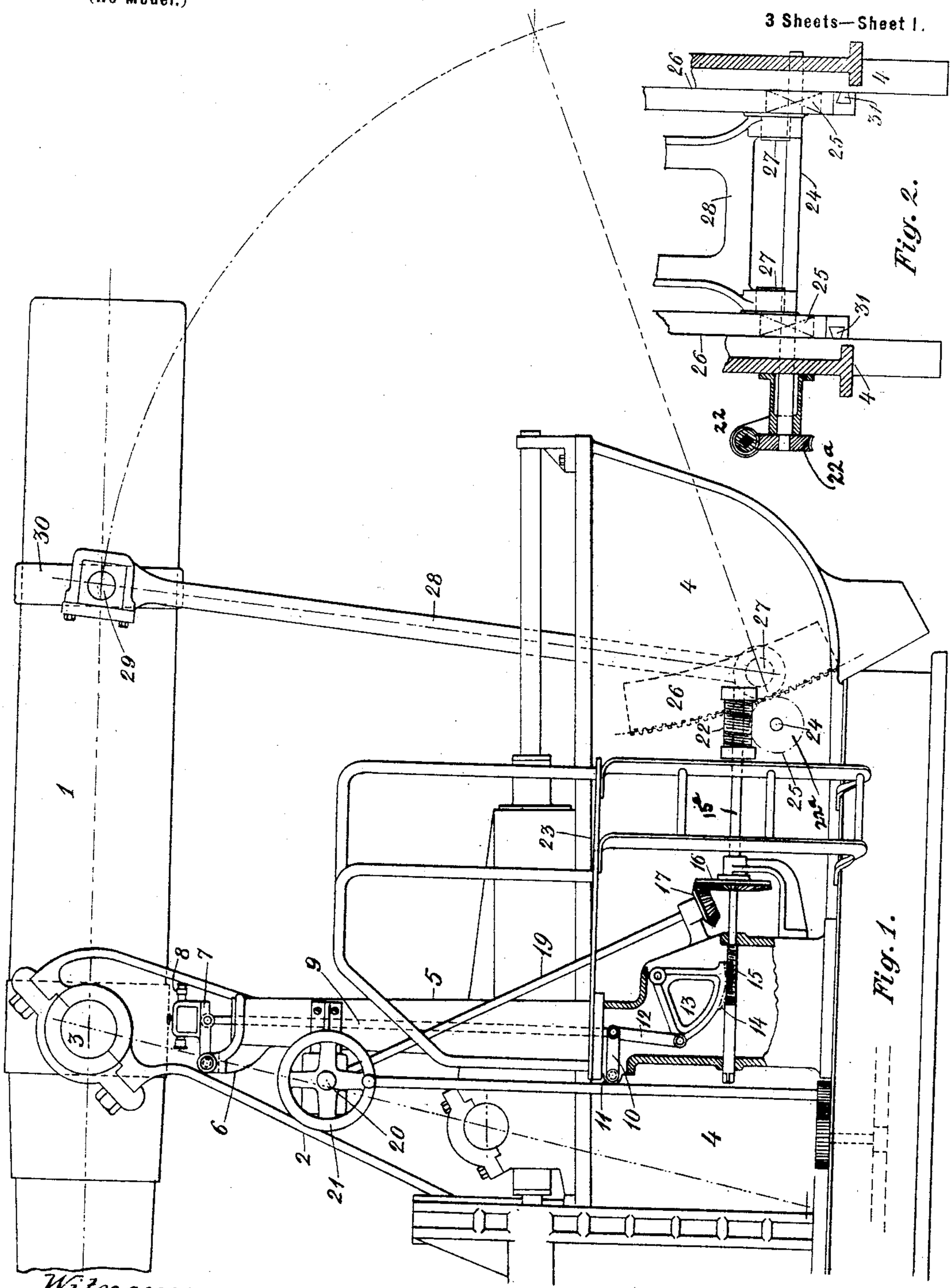

Fig. 1.

Fig. 2.

Witnesses
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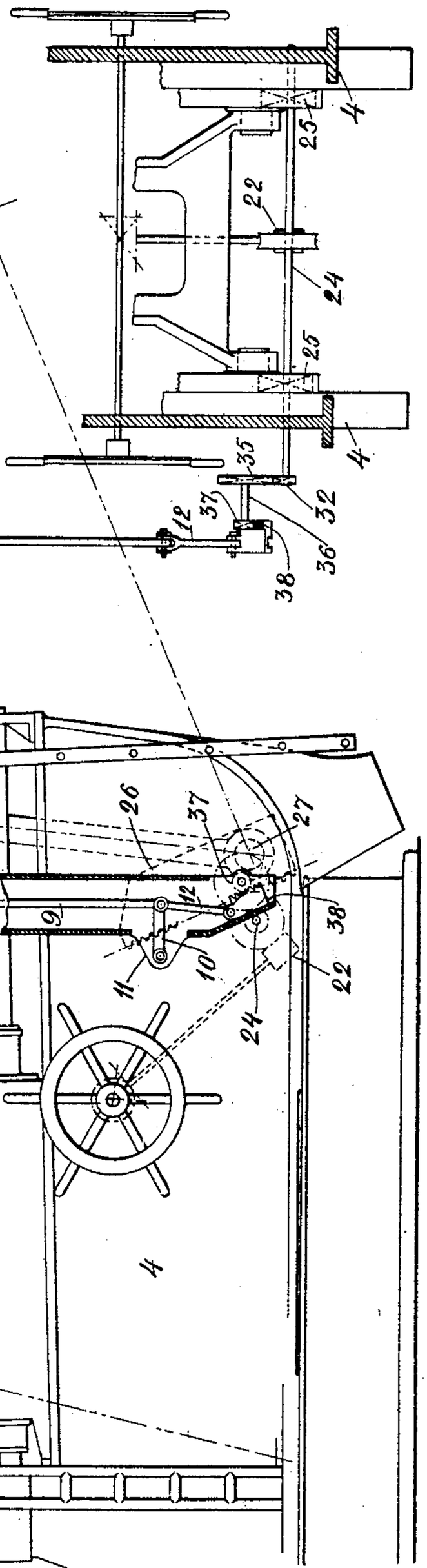

Fig. 4.

Fig. 3.

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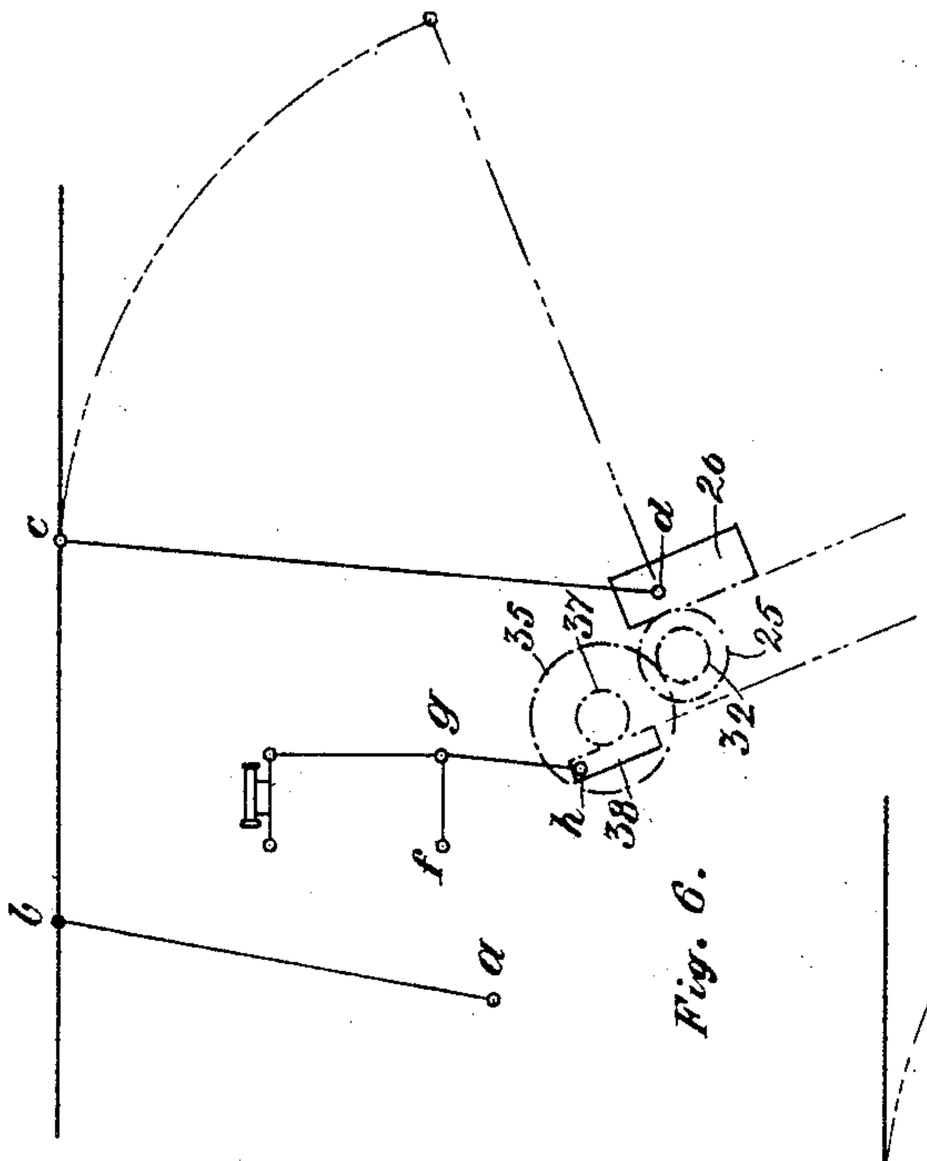

Fig. 6.

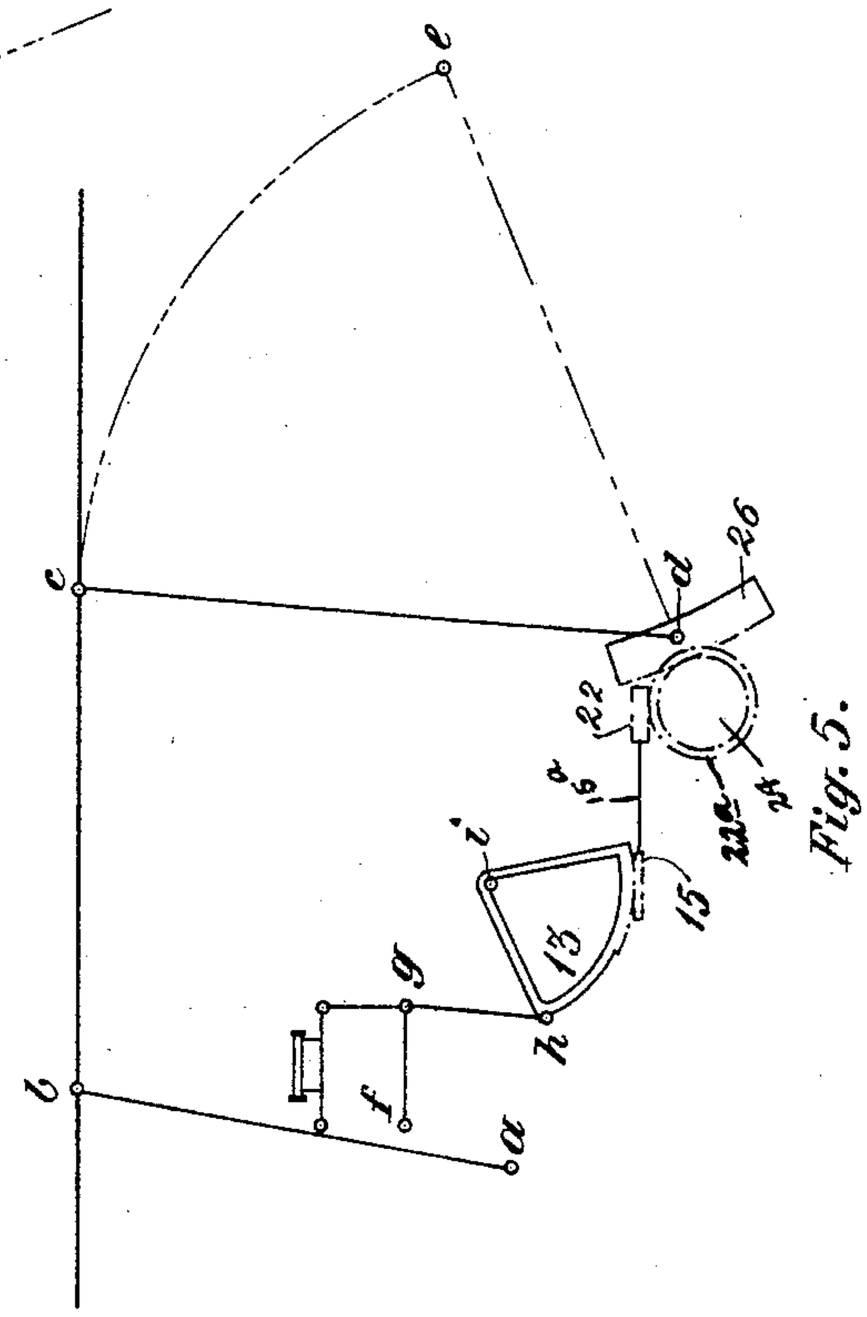

Fig. 5.

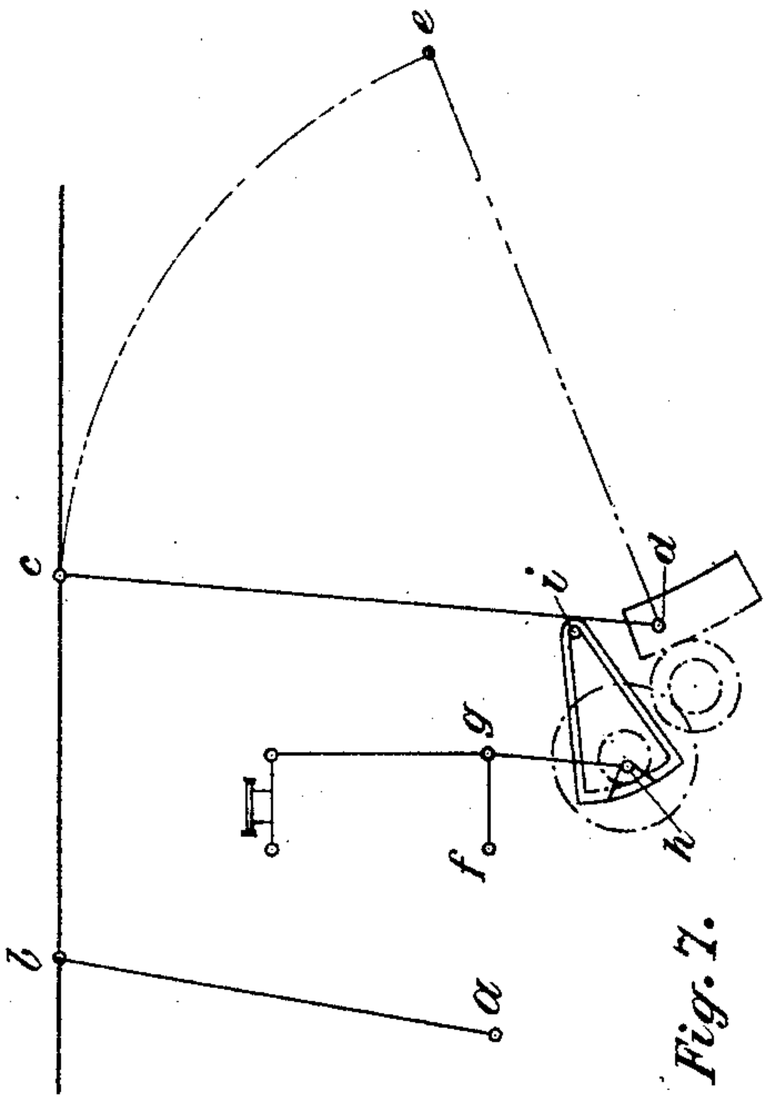

Fig. 7.

Witnesses:

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UNITED STATES PATENT OFFICE.

CARL F. JEANSÉN, OF WASHINGTON, DISTRICT OF COLUMBIA.

SIGHT MECHANISM FOR DISAPPEARING GUNS.

SPECIFICATION forming part of Letters Patent No. 626,909, dated June 13, 1899.

Application filed December 2, 1898. Serial No. 698,082. (No model.)

To all whom it may concern:

Be it known that I, CARL F. JEANSÉN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Sight Mechanism for Disappearing Guns, of which the following is a specification.

My invention relates to sighting mechanism for disappearing guns or guns which are mounted on pivotal or rocking supports which are forced backward by the recoil of the gun in firing, so that the latter will disappear in a pit or behind a parapet, and thus be out of sight of the enemy or an opposing force, enabling it to be loaded and aimed without danger.

The invention is intended more especially for use in individual firing at long and short ranges.

The object of the invention is to provide such a gun with a sight, a movable sight-support, a stationary support to which the sight-support is pivoted, and connections between the gun and sight-support operated simultaneously with the gun when elevated or depressed to obtain the range, whereby the said sight-support will move in the arc of a circle in unison with and proportional to the arc described by the gun in firing position, such movement of the gun being controlled while lowered or out of sight of the enemy by the operator who takes the sight.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a disappearing gun provided with my improvements and showing so much of the carriage as is necessary to illustrate the invention, the tubular standard being broken away at the lower end. Fig. 2 is an elevation, partly in section, of the lower end of the elevating-gear. Fig. 3 is a side elevation similar to Fig. 1, but showing a modified construction. Fig. 4 is an end elevation, partly in section, of the lower end of the elevating-gear shown in Fig. 3. Fig. 5 is a diagrammatic view of the invention shown in Fig. 1. Fig. 6 is a similar view of the modification shown in Fig. 3. Fig. 7 is a similar view of another modification.

In the said drawings, referring now to Figs. 1, 2, and 5, the reference-numeral 1 designates the gun; 2, the supports, the upper ends of which receive the trunnions of the gun, and 4 the carriage to which the said supports are pivoted. The said carriage and the rocking or tilting supports may be of any ordinary or suitable construction, and as they form no part of the present invention a detailed description thereof is not necessary.

The numeral 5 designates a tubular standard fixed to the carriage 4, at one side thereof, and provided at the upper end with a bracket 6, to which is pivoted a sight-support 7, carrying a telescope or other sight 8 of any suitable construction. Pivoted to said sight-support is a vertical rod 9, located in the standard, the lower end of which is pivotally connected with an arm 10, pivoted to a bracket 11 of said standard. The pivotal point of the sight-support and the pivotal point of the arm 10 are exactly the same distance from the vertical rod 9, so that they move in unison and parallel with each other. Pivotally connected with the lower end of rod 9 is a short rod 12, which is pivotally connected with a segment 13, pivoted to said standard. This segment is formed with teeth 14, with which engages a worm 15 of the shaft 15^a, journaled to the carriage and provided intermediate its ends with a bevel-gear 16, which engages with a corresponding gear 17 on the lower end of an inclined shaft 19, which is rotated by gears (not shown) on a shaft 20, provided with a hand-wheel 21. By this means the said worm-shaft can be turned by a person standing on the platform 23 for elevating or depressing the gun in aiming the same. At the rear or outer end of the shaft 15^a is a worm 22, which meshes with a corresponding worm-wheel 22^a on one end of a transverse shaft 24. This shaft is journaled to the carriage 4 and is provided with two cog-wheels 25, which engage with movable rack-plates 26, provided with trunnions 27, with which is pivotally connected a bar 28, by which the gun is elevated or depressed in aiming the same. Each end of this bar is provided with two lugs, the upper ones of which are connected with pivots 29 of a band 30, extending around the breech of the gun,

while the lower ones are pivotally connected with the rack-plates. The rack-plates are formed with dovetailed grooves, with which engage corresponding ribs 31, secured to the inner sides of the sides of the carriage 4.

The centers *f*, *g*, *h*, and *i* (see Fig. 5) bear a proportional relation to the pivotal points *b c d* and the center *e* of the arc described by the pivotal point *d*. The lengths *f g*, *g h*, and *h i* are proportional to the lengths *b c*, *c d*, and *d e*. The gearing, comprising worm-wheel 13, worm 15, worm 22, worm-wheel 22ª, and gears 25, with circular racks 26, is so proportioned that the angular movement of the point *h* on segment 13 around the center *i* is simultaneous with and equal in magnitude and direction to the angular movement of the pivotal point *d* on the circular rack 26 around its center of rotation *e*. As the points *f g h i* bear a proportional relation to the points *b c d e* and as point *h* has the same angular movement around the center *i* as *d* has around the center *e*, it follows that the angular movement of the point *g* around its center of rotation *f* is simultaneous with and equal in magnitude and direction to the angular movement of the point *c* around its center of rotation *b*. *f g* and *b c* correspond to arm 10 and gun *l* in firing position, respectively, in Fig. 1. The arm 10, rod 9, and sight-support 7 (see Fig. 1) have a parallel motion, and the sight-support will move in parallelism with arm 10, which in its turn, as before shown, moves simultaneously and with the same angular velocity and direction as the gun. The arm 10 is in its original position made to be parallel with the axis of the gun, and consequently both arm 10 and sight-support 7 will move in parallelism with the axis of the gun.

The operation is as follows, supposing the gun to have been fired and lowered by the recoil into the pit or behind a parapet and loaded for again firing: The gunner will take his position on the platform, with his eye to the sight, and will turn the hand-wheel, which through its connections will rotate the shaft 19 and worm-shaft 15ª. The worm 22 and worm-wheel 22ª will rotate the shaft 24 and cog-wheels 25, which latter, engaging with the rack-plates, will move the latter up or down, as the case may be, and also correspondingly move the bar 28 and so depress or elevate the gun. At the same time the worm 15 on the other end of shaft 15ª will rotate segment 13 and through link 12, the arm 10, and rod 9 raise or lower the sight-support 7 always in parallelism with gun. When the object or point sought to be struck by the projectile comes within vision, the movement is stopped and the gun raised into firing position and fired.

In Figs. 3 and 4 I have shown a modified construction in the means for moving the sight-support. The transverse shaft is also operated from below the platform instead of by the gunner or person who takes the sight. In this case the bar connected with the breech of the gun and the sight-support and vertical rod and short rod which operate the sight-support are the same as above described, the essential difference being in the connection between the transverse shaft carrying the pinions which operate the rack-plates and the devices for operating the vertical rod for moving the sight-support. Referring now to said Figs. 3 and 4, at one end the transverse shaft 24 is provided with a pinion 32, which meshes with a cog-wheel 35 on the inner end of a stud-shaft 36, journaled in the lower end of the standard and provided with a pinion 37 at the opposite end, which engages with a rack-bar 38, sliding in ways in the lower end of the standard. The rod 12 is pivotally connected with this rack-bar 38. Referring to the diagrammatic view Fig. 6, the points *f g h* bear a proportional relation to points *b c d*. The gearing connecting rack-plate 38 with rack-plate 26 is so proportioned that the velocity of point *h* bears the same proportion to the velocity of point *d* as *h g* bears to *d c*. The line of travel of point *h* is located in the same relation to point *f* as the line of travel of point *d* is located in relation to point *b*. As a consequence it follows that *f g* reproduces the movement of *b c* in raising or lowering rack-plate 26, and as *f g* or arm 10 (see Fig. 3) is at the start made parallel to *b c* or the gun *l* (see Fig. 3) it also follows that they are always parallel with each other. The operation is as follows: The transverse shaft 24 is turned by means of the worm and worm-wheel to elevate or depress the gun, as the case may be, through the medium of the rack-plates and bar connected therewith and with the gun. At the same time the sight-support will be moved in parallelism with the gun by means of the pinion on the transverse shaft, the cog-wheel and end pinion on the stud-shaft and the rack-bar, inclined arm, horizontal arm, and vertical rod connected with the sight-support. The gunner or person who takes aim stands on the platform, as before stated, with his eye to the sight, and when the object to be fired at comes within his vision he signals to the person elevating or depressing the gun to cease his work. The gun is then raised into firing position and fired.

In Fig. 7 the diagrammatic view shows still another modification. In this case the parts are the same as those just described, with the exception that I have substituted a pivoted rack-segment for the sliding rack-bar connected with the arm 12.

Many modifications in the means or mechanism connected with the bars which elevate and depress the gun and the sight and sight-support may be made without departing from the principle of the invention, the essential feature of which is the moving of the sight-support in the arc of a circle in unison with and proportional to the arc described by the

gun in aiming the same, whereby the sight-support is always in parallelism with the longitudinal axis of the gun in firing position.

Having thus fully described my invention, what I claim is—

1. In a disappearing-gun mount provided with a sight-support pivoted to said mount, means for swinging the gun on its trunnions comprising a bar pivoted to the gun-breech and to elevating-racks, in combination with means for swinging the sight-support on its pivot comprising a link pivotally connected to the rear end of the sight-support and to an elevating-segment and the train of mechanism imparting coincident movement to said racks and segment, whereby the pivotal points of the rod move in the arc of a circle proportional to that described by the gun when the latter is elevated or depressed for firing, so that the sight-support will always be parallel with the longitudinal axis of the gun.

2. The combination with a disappearing gun, its support and the training-gear, of the stationary standard, the sight-support pivotally connected therewith, the rod pivoted to said sight-support, the arm at the lower end thereof pivoted to said standard, the link pivoted to the lower end of said rod, and connections between said link and training-gear for moving said rod in the arc of a circle when the gun is elevated or depressed for firing.

3. In a disappearing-gun mount provided with a sight-support pivoted to said mount, means for swinging the gun on its trunnions comprising a bar pivoted to the gun-breech and to elevating-racks, in combination with means for swinging the sight-support on its pivot comprising a link pivotally connected to the end of an elevating-segment, the rod pivoted to the rear end of said sight-support and to said link, the arm pivoted to the lower end of said rod and to said mount and the worm gears and shaft for imparting coincident movement to said racks and segment, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CARL F. JEANSÉN.

Witnesses:
AUGUST PETERSON,
BENNETT S. JONES.